

## MODEL BASED EXHAUST GAS RECIRCULATION CONTROL ALGORITHM

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

5 The present invention relates to a system and a method for controlling an exhaust gas recirculation (EGR) system.

#### 2. Background Art

10 Internal combustion engines, and in particular, compression ignition (or diesel) engines have a wide variety of applications including passenger vehicles, marine vessels, earth-moving and construction equipment, stationary generators, and on-highway trucks, among others. Exhaust gas recirculation (EGR) systems have been introduced into internal combustion engines. EGR systems recirculate exhaust into the intake air stream of the engine, thereby reducing oxides of nitrogen that are formed when temperatures in the combustion chamber of the engine get too  
15 hot.

20 Although the EGR systems help to reduce exhaust emissions that cause smog, EGR systems cause the intake manifold air temperatures of the engine to increase to an undesirable level. Furthermore, the level of EGR is typically increased during vehicle deceleration (or decreased load conditions) and decreased during vehicle acceleration (or increased load conditions). When a diesel engine is operating in transient conditions (e.g., up and down hills, in response to a varying load, idle to rapid acceleration operation, intermittent workpiece characteristics for power takeoff driven applications, etc.), the EGR level should